

FLOW SCHEMATIC FOR FIELD SUPPLIED DATA ENTRY AND BASE STATION
OR SERVICE PROVIDER SUPPLIED COMPUTER ASSISTANCE

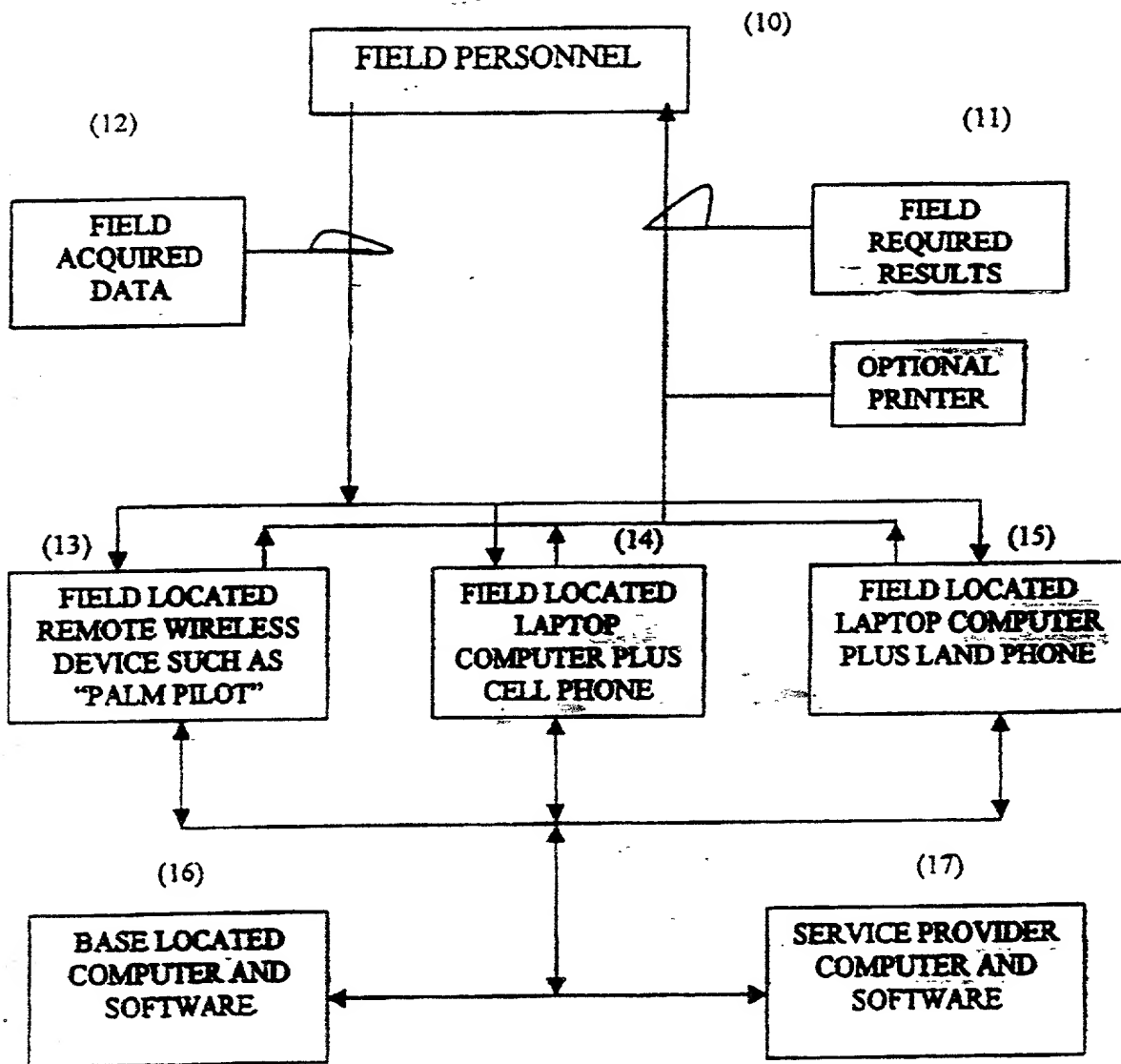


FIG. 1

PROGRAMS (18)

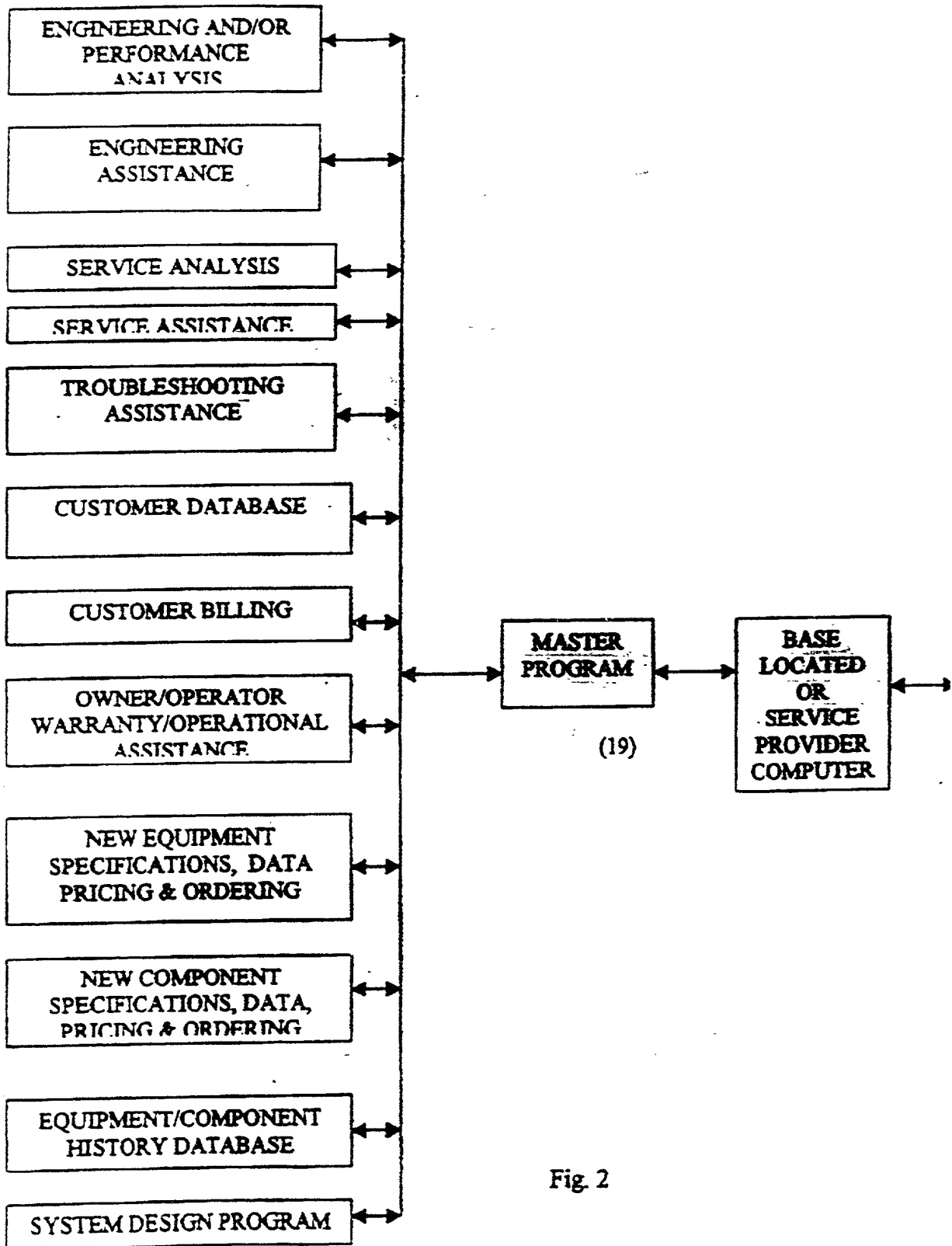


Fig. 2

FOUO 0504260

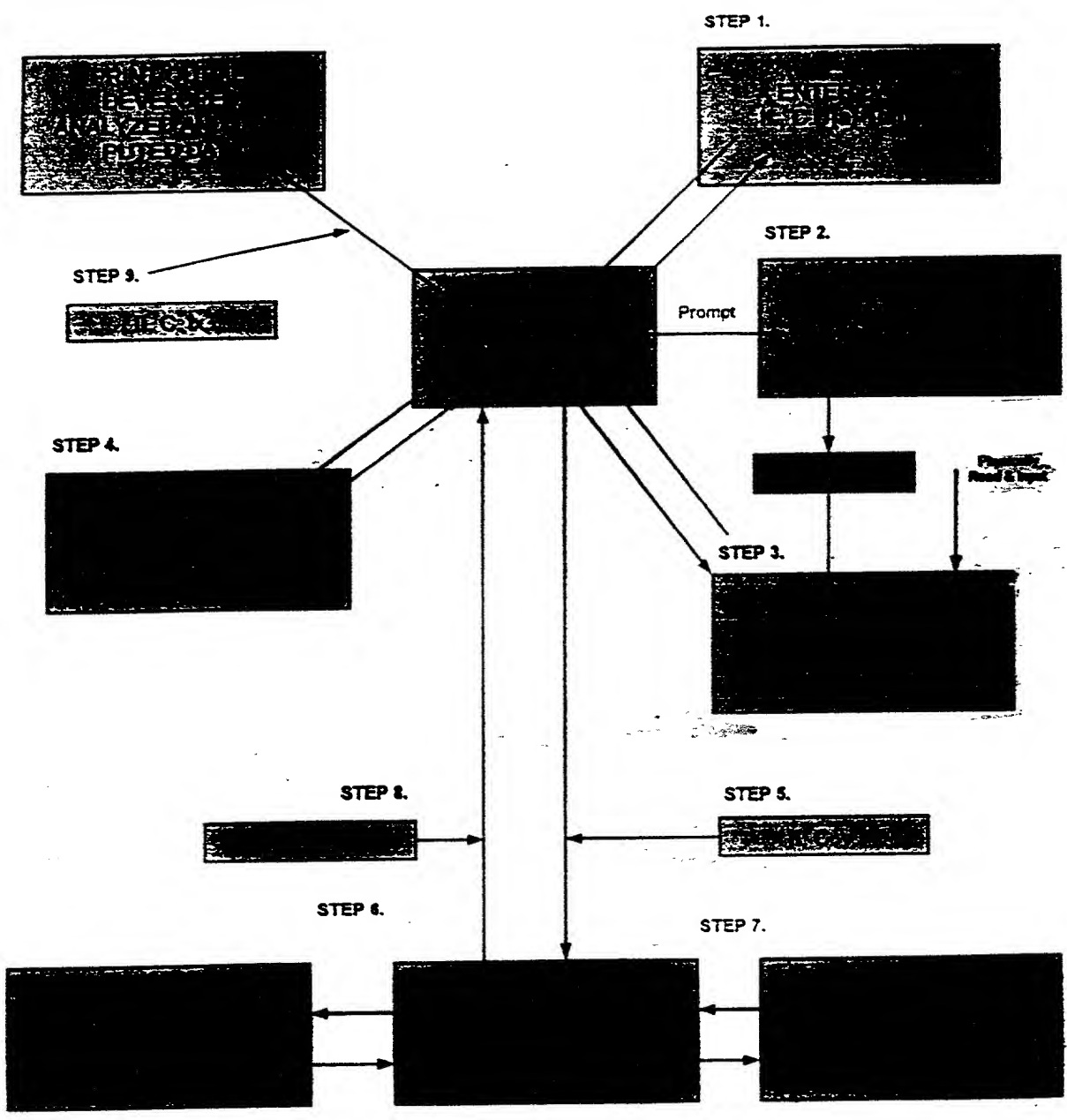


FIG. 3

THE

TYPE OF ANALYSIS (X which applies):

Perf	Trblshtg	T & B

Job Name: Phone: Fax:

Job Address: street city state z/p

Other: (e-mail) [redacted] other [redacted]

Date: Start Time:

Refrigerant Type:		Air-cooled (X)	Water-cooled (X)
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Type of System (X):	Chiller	Package	Split	A/C
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	manuf	quantity	model no	serial no	fan speed
Package System					
Chiller/Condenser					
Fan Coil Unit :					
Spilt System Condenser A/C					
Spilt System Condenser H/p					
Spilt System Air Handler					
Refrigeration Unit Condenser					
Refrigeration Unit Evaporator					

[illegible]

Condenser Fan Motor
Blower Fan Motor
Compressor No 1
Compressor No 2
Compressor No 3
Compressor No 4

[illegible]

Previous Month Electrical Consumption (KW) Previous Month System Water Consumption (Gals)
 Previous Month Gas Consumption (Cu Ft)

	Return	Plenum	Dim
Total Cost (\$)			
Total Cost (\$)			
Total Cost (\$)			

FIG. 4a

[Faint, illegible handwritten notes or bleed-through from the reverse side of the page.]

(X which applies)

Good

Bad

Explanation

[illegible]

FIG. 4b

III. OPERATIONAL DATA SHEET:

Temperatures, Refrigerant (X which applies)	Fahrenheit	Celsius
Hot Gas Discharge at Compressor		
Hot Gas Entering Condenser		
Mid Condenser Coil		
Liquid out of condenser		
Liquid into expansion device		
Mid Evaporator coil		
Suction line after evaporator		
Suction line into compressor		
Heat Pump, Suction line into rev Valve		
Heat Pump, Hot Gas line into rev Valve		

Temperatures, Air (X which applies)	Fahrenheit	Celsius
Air Entering Condenser	DB	
Air Entering Condenser	WB	
Air Exiting Condenser	DB	
Air Entering Evaporator	DB	
Air Entering Evaporator	WB	
Air Exiting Evaporator	DB	
Air Exiting Evaporator	WB	
Air Exiting Air Handler	DB	
Air Exiting Air Handler	WB	

Pressures, Refrigerant (X which applies)	PSIG	PSIA
Hot Gas Discharge @ compressor		
Hot Gas Discharge @ condenser		
Liquid Refrigerant exit condenser		
Liquid Refrigerant enter Exp Device		
Suction Gas exiting evaporator		
Suction Gas entering compressor		

Pressures, Air Flow (in inches water gauge)	
Static before Air Handler	
Static after Air Handler	
Velocity pressure Transverse Avg at straight duct section with dimensions given for main supply or return plenums	

Electrical Data (Running)		Amps		Volts	Phase	Hz
		L1	L2	L3		
Compressor No 1						
Compressor No 2						
Compressor No 3						
Compressor No 4						
Condenser Fan Motors						
Quantity						
Blower Motors						
Quantity						
Pumps - Chiller Circ	1					
	2					
Evaporative Tower	1					
	2					
Water Cooled Circ	1					
	2					

Temperatures, Water (X which applies)	Fahrenheit	Celsius
Chiller	EWT	
	LCWT	
Water Cooled Condenser	EWT	
	LWT	

Water Flow Rate (X which applies)	PSIG	PSIA
Chiller, Evaporator	Return Line	
Chiller, Evaporator	Supply Line	
Water Cooled Equip		
Condenser	Return Line	
Condenser	Supply Line	

FIG. 4C

IV. TROUBLE SHOOTING QUESTIONNAIRE DATA SHEET

Mark all those that apply (X)

<input type="checkbox"/>	Chiller Condenser	<input type="checkbox"/>	Geothermal
<input type="checkbox"/>	Air Cooled	<input type="checkbox"/>	Dual Source
<input type="checkbox"/>	Water Cooled		

Symptom (examples - list to be added to)

<input type="checkbox"/>	Unit will not run
<input type="checkbox"/>	Outdoor unit section will not run
<input type="checkbox"/>	Compressor will not start
<input type="checkbox"/>	Outdoor fan motor will not start
<input type="checkbox"/>	Outdoor unit condenser water pump will not start
<input type="checkbox"/>	Compressor hums but will not start
<input type="checkbox"/>	Compressor cycling on overload
<input type="checkbox"/>	Compressor off on high pressure control
<input type="checkbox"/>	Noisy compressor
<input type="checkbox"/>	Compressor loses oil
<input type="checkbox"/>	No cooling, but compressor runs continuously
<input type="checkbox"/>	Liquid Refrigerant flooding compressor (cap tube system)
<input type="checkbox"/>	Liquid Refrigerant flooding compressor (fixed orifice)
<input type="checkbox"/>	Liquid Refrigerant flooding compressor (TXV)
<input type="checkbox"/>	High head pressure
<input type="checkbox"/>	Low head pressure
<input type="checkbox"/>	High Suction Pressure
<input type="checkbox"/>	Low suction pressure
<input type="checkbox"/>	High operating costs
<input type="checkbox"/>	Other
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

☐ Water Tower

Symptom (examples - list to be added to)

<input type="checkbox"/>	Fan motor will not run
<input type="checkbox"/>	Cooling return water temperature high
<input type="checkbox"/>	Scale buildup is rapid
<input type="checkbox"/>	Sump water hardness is high
<input type="checkbox"/>	Other
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

☐ Fan Coil Unit

Symptom (examples - list to be added to)

<input type="checkbox"/>	Fan motor will not run
<input type="checkbox"/>	No cooling, but fan is on
<input type="checkbox"/>	Too much cooling
<input type="checkbox"/>	Other
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

FIG. 4d

↓ ↓

Oil Heat

Symptom (examples - list to be added to)

Burner will not start

Burner starts and fires but short cycles

Burner starts and fires but does not heat enough

Burner starts and fires then locks out on safety

Burner starts and fires but no flame is established

Burner starts and fires but loses flame and locks out on safety

Too much heat; burner runs continuously

Too little heat; burner runs continuously

Other

Gas Heat

Symptom (examples - list to be added to)

Unit will not run

Fan will not run

Other

Electric Heat

Symptom (examples - list to be added to)

Unit will not run

Fan will not run

Other

Air Conditioning

Air Cooled

Water Cooled

Split System

Geothermal

Dual Source

Package

Symptom (examples - list to be added to)

Unit will not run

Outdoor unit section will not run

Compressor will not start

2nd stage compressor will not start

FIG. 4e

10577 65642660

	Outdoor fan motor will not start
	Other

↓ ↓

	Air Handler
	Symptom (examples - list to be added to)
	Blower motor will not start
	Water overflowing system
	Other

↓ ↓

	Heat Pump Cooling Cycle
	Symptom (examples - list to be added to)
	Other

↓ ↓

	Heat Pump Heating Cycle
	Symptom (examples - list to be added to)
	Other

↓ ↓

	Heat Pump Heating/Cooling Cycles
	Symptom (examples - list to be added to)
	Other

↓ ↓

	Refrigeration
	High Temp
	Medium Temp

	Low Temp
	Ultra Low Temp

FIG. 4f

09024959-1400
TOT 65642660

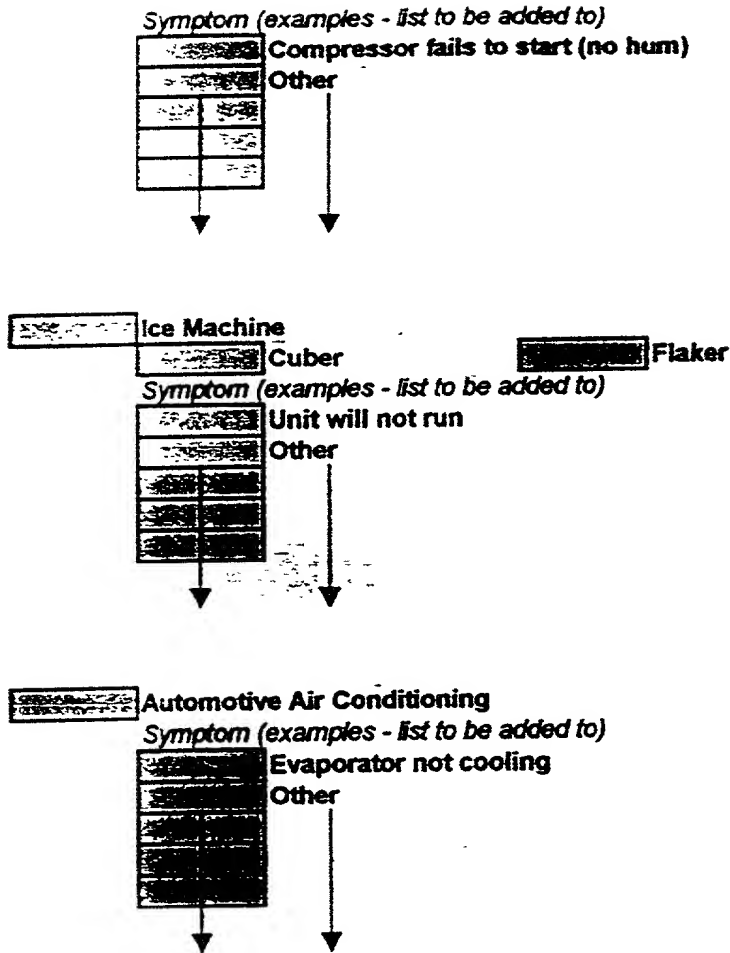


FIG. 4g

000493-1100
FORM 65642600

V. TEST AND BALANCE - AIR VOLUME DATA SHEET

A. Mark all those that apply (X)

<input type="checkbox"/>	Constant volume system
<input type="checkbox"/>	VAV System
<input type="checkbox"/>	Other

B. Fill in all appropriate (highlighted) below:

Example:

<input type="checkbox"/>	Design Air Flow VAV #1
<input type="checkbox"/>	Other

FIG. 4h

THE

TYPE OF ANALYSIS (X which applies):

Date:	7/6/01	Start Time:	11:40 PM			
Refrigerant Type:	R-22	Air-cooled (X)	<input checked="" type="checkbox"/>	Water-cooled (X)	<input type="checkbox"/>	
Unit Number or Specific Location:		Only system at residence				
Type of System (X):		Chiller	<input type="checkbox"/>	Package	<input type="checkbox"/>	
				Split	<input checked="" type="checkbox"/>	
				A/C	<input type="checkbox"/>	
				H/P	<input checked="" type="checkbox"/>	
				Refrig	<input type="checkbox"/>	

	manuf	quantity	model no	serial no	fan speed
Package System					
Chiller/Condenser					
Fan Coil Unit :					
Split System Condenser A/C					
<u>Split System Condenser H/P</u>					
<u>Split System Air Handler</u>					
Refrigeration Unit Condenser					
Refrigeration Unit Evaporator					

	hp	flw	lma	volts	phase	nz
Condenser Fan Motor						
Blower Fan Motor						
Compressor No 1						
Compressor No 2						
Compressor No 3						
Compressor No 4						

	Previous Month Electrical Consumption (KW)	Total Cost (\$)
	Previous Month System Water Consumption (Gals)	Total Cost (\$)
	Previous Month Gas Consumption (Cu Ft)	Total Cost (\$)

FIG. 5A

III. OPERATIONAL DATA SHEET:

Temperatures, Refrigerant (X which applies)	Fahrenheit Celsius	
Hot Gas Discharge at Compressor		
Hot Gas Entering Condenser		
Mid Condenser Coil		
Liquid out of condenser		
Liquid into expansion device		
Mid Evaporator coil		
Suction line after evaporator		
Suction line into compressor		
Heat Pump, Suction line into rev Valve		
Heat Pump, Hot Gas line into rev Valve		

Pressures, Refrigerant (X which applies)	PSIG PSIA	
Hot Gas Discharge @ compressor		
Hot Gas Discharge @ condenser		
Liquid Refrigerant exit condenser		
Liquid Refrigerant enter Exp Device		
Suction Gas exiting evaporator		
Suction Gas entering compressor		

Electrical Data (Running)		Amps			Volts	Phase	Hz
		L1	L2	L3			
Compressor No 1							
Compressor No 2							
Compressor No 3							
Compressor No 4							
Condenser Fan Motors							
Quantity							
Blower Motors							
Quantity							
Pumps - Chiller Circ	1						
	2						
Evaporative Tower	1						
	2						
Water Cooled Circ	1						
	2						

Temperatures, Water (X which applies)	Fahrenheit Celsius	
Chiller	EWT	
	LCWT	
Water Cooled Condenser	EWT	
	LWT	

Temperatures, Air (X which applies)	Fahrenheit Celsius	
Air Entering Condenser	DB	
Air Entering Condenser	WB	
Air Exiting Condenser	DB	
Air Entering Evaporator	DB	
Air Entering Evaporator	WB	
Air Exiting Evaporator	DB	
Air Exiting Evaporator	WB	
Air Exiting Air Handler	DB	
Air Exiting Air Handler	WB	

Pressures, Air Flow (in inches water gauge)		
Static Pressure Air Handler		
Static Pressure Return		
Velocity pressure (use for air flow)		
straight duct section with diameters given for main supply or return plenums		

FIG. 5b

I. AVAILABLE INFORMATION DATA SHEET:

PART A

TYPE OF ANALYSIS (X which applies): Perf ☒ Trblstg ☐ T & B ☐

Job Name: XVE Housewren Phone: (800) 555-0000 Fax: (800) 555-0000

Job Address: street 3333 Anywhere St. city St. Pete state FLA. zip 32655

Other: (e-mail) W.W. Housewren@xve.com other ☐

Date: 7/6/01 Start Time: 1:40 PM

Refrigerant Type: R-22 Air-cooled (X) ☒ Water-cooled (X) ☐

Unit Number or Specific Location: Only system of US system

Type of System (X): Chiller ☐ Split ☒ Package ☒ Gas Heat ☒ Electric ☒

A/C ☐ H/P ☒ Refrig ☐

PART B

Package System
Chiller/Condenser
Fan Coil Unit:
Split System Condenser A/C
Split System Condenser H/P
Split System Air Handler
Refrigeration Unit Condenser
Refrigeration Unit Evaporator

manuf	quantity	model no	serial no	fan speed
EVCON	1	BRH50420	174001073	N.A.
EVCON		AH20-055	14460300	Black

DATA PLATE INFORMATION

mtg	model no	serial no	hp	rpm	FLA/RLA	LRA	volts	phase	hz
Condenser Fan Motor	N.A.	N.A.	1/2	1100	1.8	N/A	208/230	1	60
Blower Fan Motor	N.A.	N.A.	1/2	1100	3.2	N/A	208/230	1	60
Compressor No 1	H25A000A	any 071672	N.A.	N.A.	24.7	135	208/230	1	60
Compressor No 2									
Compressor No 3									
Compressor No 4									

Main Supply Air Terminal Dimensions: 20x20"
Previous Month System Water Consumption (Gals): 1846
Previous Month Gas Consumption (Ccf): 167.4

Refrigerant	Dim	20x24"
Total Cost (\$)		
Total Cost (\$)		

FIG. 6a

III. OPERATIONAL DATA SHEET:

Temperatures, Refrigerant (X which applies)	Fahrenheit	Celsius
	X	
Hot Gas Discharge at Compressor		200
Hot Gas Entering Condenser		
Mid Condenser Coil		
Liquid out of condenser		124
Liquid into expansion device		124
Mid Evaporator coil		
Suction line after evaporator		
Suction line into compressor		75
Heat Pump, Suction line into rev Valve		
Heat Pump, Hot Gas line into rev Valve		

Pressures, Refrigerant (X which applies)	PSIG	PSIA
	X	
Hot Gas Discharge @ compressor		N.A.
Hot Gas Discharge @ condenser		
Liquid Refrigerant exit condenser		275
Liquid Refrigerant enter Exp Device		N.A.
Suction Gas exiting evaporator		
Suction Gas entering compressor		58

Temperatures, Air (X which applies)	Fahrenheit	Celsius
	X	
Air Entering Condenser	DB	92
Air Entering Condenser	WB	
Air Exiting Condenser	DB	
Air Entering Evaporator	DB	75.0
Air Entering Evaporator	WB	65.0
Air Exiting Evaporator	DB	N.A.
Air Exiting Evaporator	WB	N.A.
Air Exiting Air Handler	DB	59.0
Air Exiting Air Handler	WB	56.4

Pressures, Air Flow (in inches water gauge)	
Static before Air Handler	-1.15
Static after Air Handler	+1.25
Velocity pressure Transverse to straight duct section with dimensions given for main supply or return plenums	.033

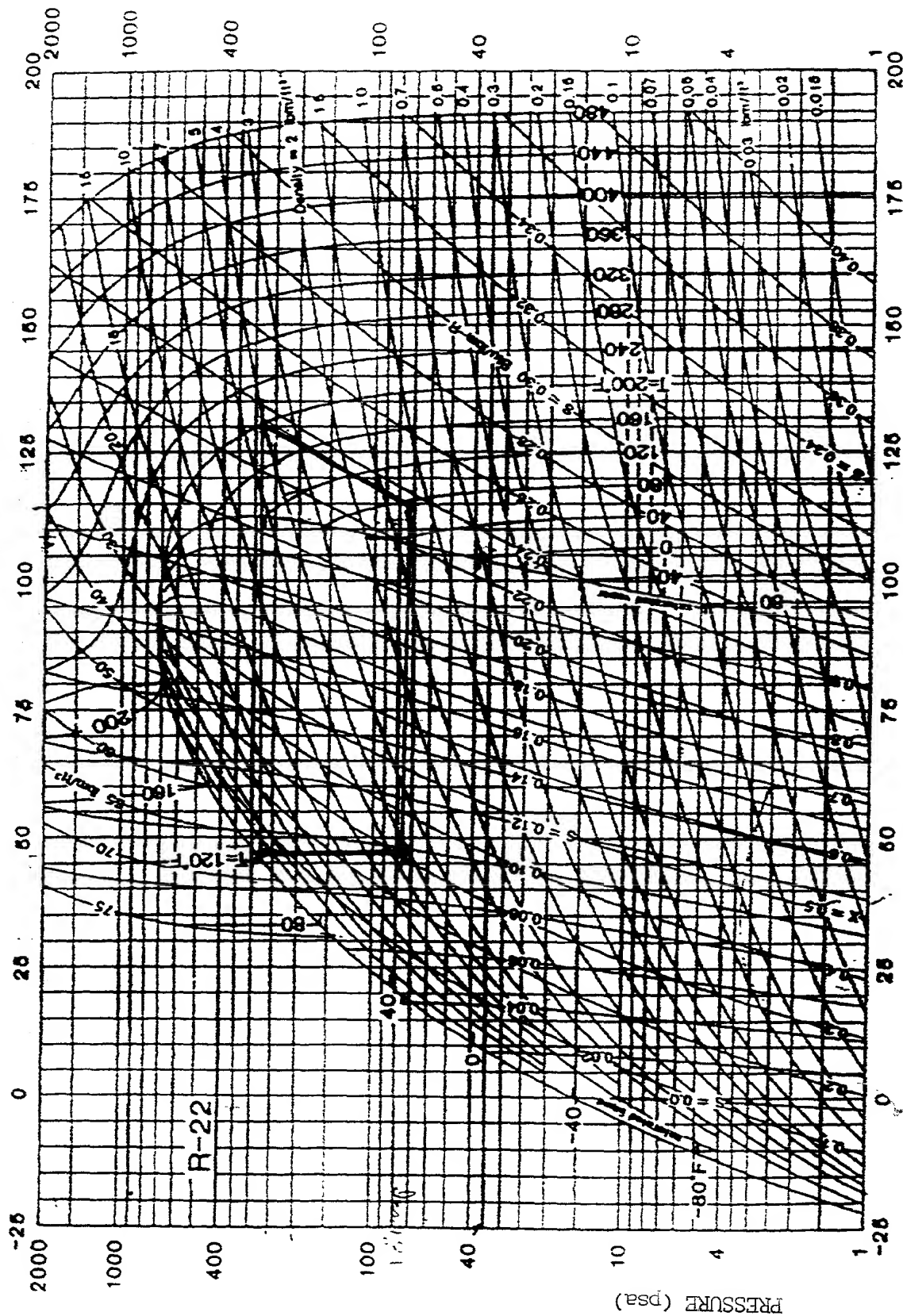
Electrical Data (Running)		L1	Amps L2	L3	Volts	Phase	Hz
Compressor No 1		22.2	22.0	—	232	1	60
Compressor No 2							
Compressor No 3							
Compressor No 4							
Condenser Fan Motors		1.6	1.7	—	232	1	60
Quantity	1						
Blower Motors		3.5	3.6	—	232	1	60
Quantity	1						
Pumps - Chiller Circ	1						
	2						
Evaporative Tower	1						
	2						
Water Cooled Circ	1						
	2						

Temperatures, Water (X which applies)	Fahrenheit	Celsius
Chiller	EWT	
	LCWT	
Water Cooled Condenser	EWT	
	LWT	

Water Flow Rate (X which applies)	PSIG	PSIA
Chiller, Evaporator Return Line		
Chiller, Evaporator Supply Line		
Water Cooled Equip		
Condenser Return Line		
Condenser Supply Line		

FIG. 6b

ENTHALPY (Btu/lbm)



ENTHALPY (Btu/lbm)

FIG. 7

Thermophysical Properties of Refrigerants

Refrigerant 22 (Chlorodifluoromethane) Properties of Saturated Liquid and Saturated Vapor

Temp., °F	Pressure, psia	Density, lb./ft. ³		Volume, ft. ³ /lb.		Enthalpy, Btu/lb.		Entropy, Btu/lb.-°F		Specific Heat, c _p , Btu/lb.-°F		Velocity of Sound, ft./sec.		Viscosity, lb./ft.-sec.		Thermal Cond., Btu/lb.-°F		Surface Tension, dynes/cm	Temp., °F	
		Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor			
-250.00	—	107.37	—	—	—	-63.169	76.504	-0.21914	0.44952	—	0.1018	1.2914	—	395.	—	—	—	—	-250.00	
-240.00	—	106.41	—	—	—	-56.462	77.629	-0.18786	0.42332	—	0.1033	1.2860	—	403.	—	—	—	—	-240.00	
-230.00	—	105.48	—	—	—	-51.569	78.669	-0.16605	0.40101	—	0.1048	1.2807	—	411.	—	—	—	36.75	-230.00	
-220.00	0.002	104.58	16805	—	—	-47.705	79.724	-0.14958	0.38211	—	0.1064	1.2754	—	419.	—	—	—	15.70	-220.00	
-210.00	0.004	103.70	6982.5	—	—	-44.426	80.796	-0.13616	0.36538	—	0.1080	1.2703	—	427.	—	—	—	34.67	-210.00	
-200.00	0.010	102.81	3151.5	—	—	-41.474	81.882	-0.12457	0.35048	—	0.1096	1.2653	—	435.	—	—	—	33.63	-200.00	
-190.00	0.022	101.92	1527.4	—	—	-38.706	82.984	-0.11411	0.33715	—	0.1113	1.2604	—	442.	—	—	—	32.61	-190.00	
-180.00	0.044	101.03	787.79	—	—	-36.038	84.100	-0.10439	0.32518	—	0.1130	1.2558	—	449.	—	—	—	31.59	-180.00	
-170.00	0.084	100.12	429.22	—	—	-33.424	85.230	-0.09521	0.31441	—	0.1147	1.2515	—	456.	—	—	—	30.58	-170.00	
-160.00	0.151	99.22	245.51	—	—	-30.839	86.373	-0.08644	0.30470	—	0.1165	1.2474	—	463.	—	—	—	29.57	-160.00	
-150.00	0.262	98.30	146.65	—	—	-28.269	87.528	-0.07800	0.29594	—	0.1183	1.2437	—	470.	—	—	—	28.57	-150.00	
-140.00	0.435	97.38	91.059	—	—	-25.708	88.692	-0.06986	0.28801	—	0.1201	1.2403	—	476.	—	—	—	27.57	-140.00	
-130.00	0.696	96.46	58.544	—	—	-23.150	89.864	-0.06198	0.28082	—	0.1221	1.2374	—	482.	—	—	—	26.59	-130.00	
-120.00	1.080	95.53	38.833	—	—	-20.594	91.040	-0.05435	0.27430	0.2555	0.1241	1.2349	3483.	488.	—	—	—	25.61	-120.00	
-110.00	1.626	94.60	26.494	—	—	-18.038	92.218	-0.04694	0.26838	0.2555	0.1262	1.2329	3384.	494.	—	—	0.0765	—	24.64	-110.00
-100.00	2.384	93.66	18.540	—	—	-15.481	93.397	-0.03973	0.26298	0.2557	0.1285	1.2315	3290.	500.	—	—	0.0749	—	23.67	-100.00
-90.00	3.413	92.71	13.275	—	—	-12.921	94.572	-0.03271	0.25807	0.2561	0.1308	1.2307	3198.	505.	—	—	0.0734	0.00292	22.71	-90.00
-80.00	4.778	91.75	9.7044	—	—	-10.355	95.741	-0.02587	0.25357	0.2567	0.1334	1.2305	3110.	510.	—	—	0.0718	0.00315	21.76	-80.00
-70.00	6.555	90.79	7.2285	—	—	-7.783	96.901	-0.01919	0.24945	0.2574	0.1361	1.2310	3023.	514.	—	—	0.0703	0.00338	20.82	-70.00
-60.00	8.830	89.81	5.4766	—	—	-5.201	98.049	-0.01266	0.24567	0.2584	0.1389	1.2323	2937.	519.	—	—	0.0688	0.00360	19.89	-60.00
-50.00	11.696	88.83	4.2138	—	—	-2.608	99.182	-0.00627	0.24220	0.2596	0.1420	1.2344	2852.	522.	—	—	0.0673	0.00382	18.96	-50.00
-40.00	13.383	87.83	3.7160	—	—	-1.306	99.742	-0.00312	0.24006	0.2604	0.1456	1.2358	2810.	524.	—	—	0.0665	0.00393	18.50	-40.00
-30.00	14.696	86.82	3.4048	—	—	-0.377	100.138	-0.00090	0.23944	0.2609	0.1448	1.2369	2780.	525.	—	—	0.0660	0.00401	18.18	-30.00
-20.00	15.255	85.82	3.2880	—	—	0.000	100.296	0.00000	0.23899	0.2611	0.1453	1.2374	2768.	526.	—	—	0.0658	0.00404	18.05	-20.00
-10.00	17.329	84.72	2.9185	1.310	100.847	0.00309	0.23748	0.00309	0.23748	0.2620	0.1471	1.2393	2725.	527.	—	—	0.0651	0.00414	17.59	-10.00
0.00	19.617	83.61	2.5984	2.624	101.391	0.00616	0.23602	0.00616	0.23602	0.2629	0.1489	1.2414	2683.	528.	—	—	0.0643	0.00425	17.14	0.00
10.00	22.136	82.49	2.3302	3.944	101.928	0.00920	0.23462	0.00920	0.23462	0.2638	0.1507	1.2437	2641.	530.	—	—	0.0636	0.00435	16.69	10.00
20.00	24.899	81.37	2.0774	5.268	102.461	0.01222	0.23327	0.01222	0.23327	0.2648	0.1527	1.2463	2599.	531.	—	—	0.0629	0.00445	16.24	20.00
30.00	27.924	80.25	1.8630	6.598	102.986	0.01521	0.23197	0.01521	0.23197	0.2659	0.1547	1.2493	2557.	532.	—	—	0.0622	0.00456	15.79	30.00
40.00	31.226	79.12	1.6784	7.934	103.503	0.01818	0.23071	0.01818	0.23071	0.2671	0.1567	1.2525	2515.	533.	—	—	0.0614	0.00466	—	40.00
50.00	34.821	77.99	1.5142	9.276	104.013	0.02113	0.22949	0.02113	0.22949	0.2684	0.1589	1.2560	2473.	534.	—	—	0.0607	0.00476	—	50.00
60.00	38.726	76.86	1.3691	10.624	104.515	0.02406	0.22832	0.02406	0.22832	0.2697	0.1611	1.2599	2431.	535.	0.615	0.0268	0.0600	0.00486	—	60.00
70.00	42.960	75.73	1.2406	11.979	105.009	0.02697	0.22718	0.02697	0.22718	0.2710	0.1634	1.2641	2389.	535.	0.597	0.0271	0.0593	0.00496	—	70.00
80.00	47.538	74.59	1.1265	13.342	105.493	0.02987	0.22607	0.02987	0.22607	0.2725	0.1658	1.2687	2346.	535.	0.580	0.0274	0.0586	0.00506	—	80.00
90.00	52.480	73.45	1.0250	14.712	105.968	0.03275	0.22500	0.03275	0.22500	0.2740	0.1683	1.2737	2304.	536.	0.563	0.0276	0.0579	0.00516	—	90.00
100.00	57.803	72.31	0.9343	16.090	106.434	0.03561	0.22395	0.03561	0.22395	0.2756	0.1709	1.2792	2262.	536.	0.546	0.0279	0.0572	0.00526	—	100.00
110.00	63.526	71.17	0.8532	17.476	106.891	0.03846	0.22294	0.03846	0.22294	0.2773	0.1737	1.2851	2219.	536.	0.530	0.0282	0.0566	0.00536	—	110.00
120.00	69.667	70.03	0.7804	18.871	107.336	0.04129	0.22195	0.04129	0.22195	0.2791	0.1765	1.2915	2177.	536.	0.515	0.0284	0.0559	0.00546	—	120.00
130.00	76.245	68.89	0.7150	20.275	107.769	0.04411	0.22098	0.04411	0.22098	0.2809	0.1794	1.2984	2134.	535.	0.499	0.0287	0.0552	0.00555	—	130.00
140.00	83.280	67.75	0.6561	21.688	108.191	0.04692	0.22004	0.04692	0.22004	0.2829	0.1825	1.3059	2091.	535.	0.484	0.0290	0.0545	0.00565	—	140.00
150.00	90.791	66.61	0.6029	23.111	108.600	0.04972	0.21912	0.04972	0.21912	0.2849	0.1857	1.3141	2048.	534.	0.470	0.0292	0.0538	0.00575	—	150.00
160.00	98.799	65.47	0.5548	24.544	108.997	0.05251	0.21821	0.05251	0.21821	0.2870	0.1891	1.3229	2005.	533.	0.456	0.0295	0.0532	0.00584	—	160.00
170.00	107.32	64.33	0.5111	25.988	109.379	0.05529	0.21732	0.05529	0.21732	0.2893	0.1927	1.3324	1962.	532.	0.442	0.0298	0.0525	0.00594	—	170.00
180.00	116.38	63.19	0.4715	27.443	109.748	0.05806	0.21644	0.05806	0.21644	0.2916	0.1964	1.3428	1919.	531.	0.429	0.0301	0.0518	0.00604	—	180.00
190.00	126.00	62.05	0.4355	28.909	110.103	0.06082	0.21557	0.06082	0.21557	0.2941	0.2003	1.3540	1876.	530.	0.416	0.0303	0.0512	0.00613	—	190.00
200.00	136.19	60.91	0.4026	30.387	110.441	0.06358	0.21472	0.06358	0.21472	0.2967	0.2045	1.3663	1832.	528.	0.404	—	0.0505	0.00623	—	200.00
210.00	146.98	59.77	0.3726	31.877	110.761	0.06633	0.21387	0.06633	0.21387	0.2994	0.2089	1.3796	1788.	527.	0.392	—	0.0499	0.00632	—	210.00
220.00	158.40	58.63	0.3451	33.381	111.066	0.06907	0.21302	0.06907	0.21302	0.3024	0.2135	1.3941	1744.	525.	0.380	—	0.0492	0.00642	—	220.00
230.00	170.45	57.49	0.3199	34.898	111.350	0.07182	0.21218	0.07182	0.21218	0.3055	0.2185	1.4100	1700.	523.	0.369	—	0.0486	0.00652	—	230.00
240.00	183.17	56.35	0.2968	36.430	111.616	0.07456	0.21134	0.07456	0.21134	0.3088	0.2238	1.4275	1655.	520.	0.358	—	0.0479	0.00661	—	240.00
250.00	196.57	55.21	0.2756	37.977	111.869	0.07730	0.21050	0.07730	0.21050	0.3123	0.2295	1.4467	1611.	518.	0.348	—	0.0473	0.00671	—	250.00
260.00	210.69	54.07	0.2560	39.538	112.081	0.08003	0.20965	0.08003	0.20965	0.3162	0.2356	1.4678	1566.	515.	0.338	—	0.0466	0.00680	—	260.00
270.00	225.53	52.93	0.2379	41.119	112.278	0.08277	0.20879	0.08277	0.20879	0.3203	0.2422	1.4912	1520.	512.	—	—	0.0460	0.00690	—	270.00
280.00	241.14	51.79	0.2212	42.717	112.448	0.08552	0.20793	0.08552	0.20793	0.3248	0.2495	1.5173	1474.	509.	—	—	0.0454	0.00699	—	280.00
290.00	257.52	50.65	0.2058	44.334	112.591	0.08827	0.20705	0.08827	0.20705	0.3298	0.2573	1.5464	1428.	506.	—	—	0.0447	0.00709	—	290.00
300.00	274.71	49.51	0.1914	45.972	112.704	0.09103	0.20615	0.09103	0.20615	0.3353	0.2660	1.5791	1382.	502.	—	—	0.0441	0.00719	—	300.00
310.00	292.73	48.37	0.1781	47.633	112.783	0.09379	0.20522	0.09379	0.20522	0.3413	0.2756	1.6160	1334.	498.	—	—	—	—	—	310.00
320.00	311.61	47.23	0.1657																	

*temperatures are on the ITS-90 scale

b = normal boiling point

c = critical point

Superheated Vapor — Constant Pressure Tables at Pressure Intervals — R-22
V = volume in cu/ft/lb; H = enthalpy in Btu/lb; S = entropy in Btu/(lb·°R) (saturation properties in parentheses)

50+14.7
= 74.7

Temp. °F	Absolute Pressure lbg/in.														
	75			80			85			90			95		
	60.304 PSIG (34.13 F)			65.304 PSIG (37.76 F)			70.304 PSIG (41.22 F)			75.304 PSIG (44.53 F)			80.304 PSIG (47.71 F)		
	V	H	S	V	H	S	V	H	S	V	H	S	V	H	S
40	0.77240	107.644	0.22098	0.68318	107.954	0.22029	0.64398	108.244	0.21964	0.60897	108.518	0.21903	0.57751	108.772	0.21845
50	0.74013	108.862	0.22303	0.65782	108.347	0.22107	—	—	—	—	—	—	—	—	—
60	0.78148	110.383	0.22845	0.70822	110.088	0.22454	0.66115	109.799	0.22272	0.61924	109.498	0.22088	0.58165	109.187	0.21928
70	0.78241	112.119	0.22981	0.72820	111.843	0.22793	0.68030	111.584	0.22614	0.63786	111.280	0.22443	0.59844	110.982	0.22277
80	0.80298	113.843	0.23308	0.74780	113.584	0.23125	0.68906	113.322	0.22948	0.65688	113.058	0.22781	0.61881	112.787	0.22610
90	0.82323	115.588	0.23632	0.76708	115.323	0.23460	0.71748	115.076	0.23278	0.67334	114.827	0.23112	0.63381	114.575	0.22883
100	0.84320	117.291	0.23948	0.78605	117.061	0.23770	0.73558	116.829	0.23588	0.68888	116.584	0.23437	0.65048	116.367	0.23181
110	0.86291	119.019	0.24280	0.80477	118.801	0.24083	0.75343	118.582	0.23815	0.70777	118.388	0.23758	0.66887	118.137	0.23482
120	0.88238	120.748	0.24588	0.82325	120.544	0.24382	0.77104	120.336	0.24226	0.72459	120.127	0.24088	0.68301	119.915	0.23817
130	0.90167	122.485	0.24888	0.84152	122.290	0.24686	0.78842	122.093	0.24532	0.74120	121.894	0.24378	0.69892	121.694	0.24228
140	0.92076	124.228	0.25188	0.85980	124.040	0.24985	0.80561	123.853	0.24833	0.75780	123.686	0.24678	0.71462	123.475	0.24531
150	0.93968	125.973	0.25480	0.87751	125.798	0.25290	0.82263	125.618	0.25130	0.77383	125.438	0.24977	0.73015	125.258	0.24831
160	0.95844	127.728	0.25750	0.89526	127.558	0.25582	0.83948	127.389	0.25422	0.78989	127.218	0.25271	0.74650	127.047	0.25128
170	0.97707	129.487	0.26036	0.91286	129.326	0.25869	0.85619	129.165	0.25711	0.80581	129.002	0.25561	0.76071	128.839	0.25418
180	0.99557	131.255	0.26319	0.93034	131.102	0.26154	0.87277	130.948	0.25987	0.82158	130.793	0.25848	0.77578	130.637	0.25708
190	1.0139	133.032	0.26598	0.94770	132.865	0.26435	0.88923	132.738	0.26279	0.83725	132.589	0.26131	0.79073	132.440	0.26000
200	1.0322	134.817	0.26876	0.96495	134.677	0.26712	0.90558	134.535	0.26558	0.85279	134.383	0.26411	0.80558	134.251	0.26271
210	1.0504	136.611	0.27150	0.98208	136.476	0.26987	0.92182	136.341	0.26833	0.86824	136.205	0.26867	0.82029	136.088	0.26548
220	1.0685	138.414	0.27421	0.99915	138.284	0.27258	0.93797	138.154	0.27108	0.88388	138.024	0.26981	0.83482	137.883	0.26823
230	1.0865	140.228	0.27689	1.0161	140.101	0.27529	0.95404	139.977	0.27378	0.89885	139.851	0.27232	0.84948	139.725	0.27094
240	1.1044	142.047	0.27958	1.0330	141.928	0.27795	0.97003	141.808	0.27844	0.92403	141.687	0.27500	0.86393	141.588	0.27383

FIG. 9

006453 1101
10511 6542660

PERFORMANCE TABLE

BRISTOL COMPRESSORS
MODEL H25A56QCBC 60Hz

REFRIGERANT : R22
DISPLACEMENT : 5.46 CUBIC INCHES
MOTOR : 2 -POLE
VOLTAGE : 230-1-60
SUBCOOLING : 15.0 deg F
SUPERHEAT : 20.0 deg F

Release EN: A29905
Revision EN: B15908 Date: 7/94
Preliminary Data

CAPACITY (BTU/HR)

		EVAPORATING TEMPERATURE, deg F																
		-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	
CONDENSING TEMPERATURE deg F	80	12512	15425	18645	22184	26057	30279	34864	39825	45178	50936	57113	63724	70782	78305	86300	94775	
	90	11331	14025	17018	20325	23960	27937	32271	36975	42064	47552	53453	59782	66553	73779	81476	89651	
	100	10079	12554	15322	18398	21796	25530	29614	34063	38890	44110	49737	55785	62269	69203	76600	84475	
	110		11057	13602	16449	19611	23103	26939	31134	35700	40654	46008	51777	57976	64618	71717	79288	
	120				14520	17448	20700	24290	28231	32539	37227	42310	47802	53717	60068	66872	74141	
	130						18365	21710	25400	29450	33875	38688	43903	49536	55599	62108	69076	
	140								22684	26478	30641	35185	40126	45478	51254	57469	64138	
	150											31846	36514	41586	47077	53000	59571	

POWER (WATTS)

		EVAPORATING TEMPERATURE, deg F																
		-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	
CONDENSING TEMPERATURE deg F	80	2163	2319	2465	2599	2721	2830	2925	3005	3071	3121	3155	3172	3171	3153			
	90	2231	2404	2566	2719	2860	2990	3108	3213	3304	3382	3444	3492	3523	3538			
	100	2271	2459	2640	2812	2974	3127	3268	3399	3518	3626	3716	3795	3860	3909	3943	3967	
	110		2487	2687	2879	3064	3240	3407	3565	3712	3847	3972	4083	4182	4268	4339	4395	
	120				2922	3130	3331	3525	3710	3887	4054	4210	4356	4491	4613	4723	4819	
	130						3400	3621	3836	4043	4242	4433	4614	4785	4946	5096	5234	
	140								3943	4182	4414	4640	4858	5067	5267	5458	5639	
	150											4832	5087	5336	5577	5810	6035	

CURRENT (AMPS)

		EVAPORATING TEMPERATURE, deg F																
		-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	
CONDENSING TEMPERATURE deg F	80	9.9	10.6	11.3	11.8	12.3	12.8	13.1	13.4	13.7	13.9	14.1	14.2	14.2	14.3			
	90	10.1	10.9	11.6	12.3	12.8	13.4	13.9	14.3	14.6	15.0	15.2	15.5	15.7	15.9			
	100	10.1	11.0	11.9	12.6	13.3	13.9	14.5	15.1	15.5	16.0	16.4	16.8	17.1	17.4	17.7	18.0	
	110		11.1	12.0	12.9	13.7	14.4	15.1	15.8	16.4	17.0	17.5	18.0	18.5	19.0	19.4	19.8	
	120				13.1	14.0	14.8	15.7	16.4	17.2	17.9	18.6	19.2	19.8	20.5	21.1	21.6	
	130						15.1	16.1	17.0	17.9	18.7	19.5	20.3	21.1	21.9	22.7	23.4	
	140								17.5	18.5	19.5	20.4	21.4	22.3	23.3	24.2	25.1	
	150											21.2	22.4	23.5	24.6	25.7	26.8	

MASS FLOW (LB/HR)

		EVAPORATING TEMPERATURE, deg F																
		-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	
CONDENSING TEMPERATURE deg F	80	162.6	199.6	239.7	283.0	329.9	380.4	434.7	493.0	555.5	622.4	693.9	770.1	851.2	937.4			
	90	153.9	189.5	228.3	270.4	316.1	365.5	418.8	476.2	537.9	604.0	674.7	750.2	830.7	916.4			
	100	142.2	176.5	214.0	255.0	299.6	347.9	400.3	456.8	517.6	582.9	653.0	727.9	807.9	893.1	983.7	1080.0	
	110		161.3	197.6	237.5	281.0	328.4	379.8	435.4	495.5	560.1	629.5	703.9	783.4	868.2	958.4	1054.4	
	120				218.7	261.2	307.6	358.2	413.0	472.4	536.3	605.2	679.0	758.1	842.5	932.5	1028.2	
	130						286.6	336.3	390.4	449.1	512.4	580.7	654.1	732.8	816.9	906.6	1002.2	
	140								368.4	426.4	489.2	557.0	630.0	708.3	792.1	881.7	977.1	
	150											534.9	607.5	685.5	769.1	858.5	953.8	

FIG. 10

FIG. 10 "054260"

BLOWER PERFORMANCE DATA

MODEL AH20								
Blower Speed	S.C.F.M. at E.S.P.							
	.1	.2	.3	.4	.5	.6	.7	.8
High	2125	2100	2055	2020	1980	1930	1870	1820
Med. High	1730	1710	1695	1675	1655	1620	1600	1585
Low	1385	1375	1365	1360	1345	1280	1300	1280

Note: C.F.M. deliveries shown are with filter and coil in place.

FIG. 12

COOLING PERFORMANCE DATA

HEAT PUMP MODEL NUMBER: **BRHS060B**

INDOOR COIL MODEL NUMBER: **U25R60RV**

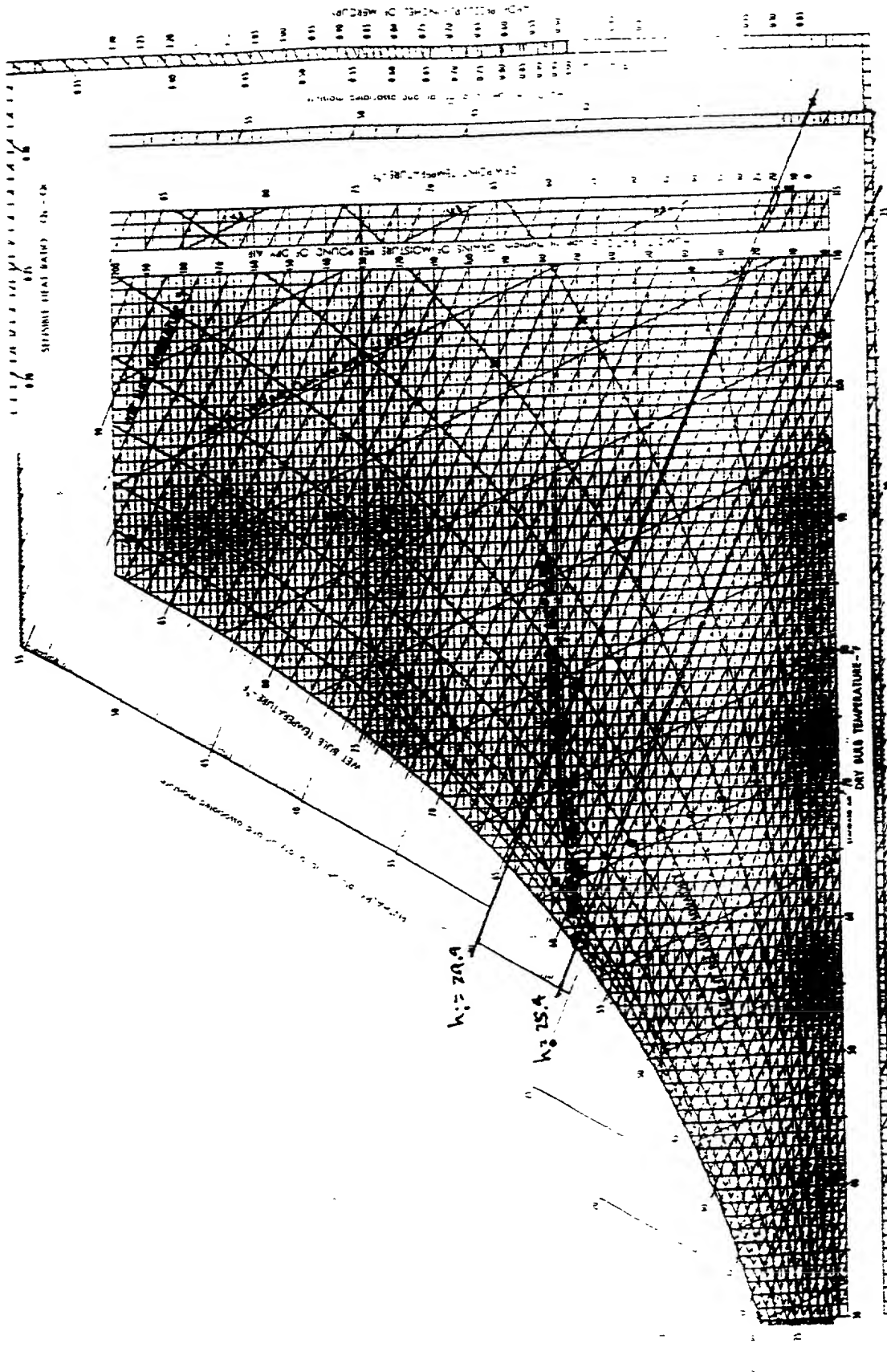
INDOOR AIR		AIR TEMPERATURE ENTERING OUTDOOR UNIT																	
		75°			85°			95°			105°			115°					
		CAPACITY BTU/H			CAPACITY BTU/H			CAPACITY BTU/H			CAPACITY BTU/H			CAPACITY BTU/H					
ID CFM	ID DBWB	TC	SC	KW	TC	SC	KW	TC	SC	KW	TC	SC	KW	TC	SC	KW	TC	SC	KW
1500	85/71	83.7	39.0	4.51	80.4	37.8	4.85	57.1	36.6	5.19	53.7	35.4	5.50	50.2	34.1	5.80			
	80/67	58.1	37.4	4.34	55.3	36.3	4.86	52.4	35.1	4.98	49.2	33.8	5.27	46.0	32.5	5.55			
	75/63	53.2	36.1	4.22	50.4	34.9	4.52	47.8	33.8	4.81	44.7	32.3	5.08	41.7	31.0	5.30			
	73/61	51.1	35.9	4.15	48.5	34.9	4.44	45.9	33.8	4.72	43.0	32.4	4.98	40.1	30.8	5.20			
1700	85/71	84.9	41.3	4.55	81.5	40.1	4.89	58.1	38.8	5.23	54.8	37.6	5.54	51.0	36.4	5.85			
	80/67	59.3	39.8	4.39	56.3	38.6	4.72	53.3	37.4	5.04	50.1	36.0	5.32	46.8	34.6	5.60			
	75/63	54.4	38.1	4.25	51.7	36.9	4.55	48.9	35.7	4.85	45.8	34.3	5.10	42.8	32.8	5.35			
	73/61	52.2	38.0	4.20	49.5	36.8	4.48	46.8	35.6	4.77	43.9	34.3	5.01	40.9	32.9	5.25			
1900	85/71	85.9	43.4	4.58	82.4	42.2	4.93	58.9	40.9	5.27	55.4	39.7	5.59	51.9	38.4	5.91			
	80/67	60.4	41.8	4.43	57.3	40.5	4.76	54.1	39.2	5.08	50.9	37.9	5.36	47.8	36.5	5.64			
	75/63	55.5	39.9	4.29	52.6	38.7	4.59	49.6	37.4	4.89	46.4	36.0	5.14	43.1	34.8	5.39			
	73/61	53.3	39.9	4.22	50.8	38.7	4.52	47.8	37.4	4.81	44.8	35.9	5.06	41.4	34.4	5.30			

NOTE: All capacities are net with outdoor fan already deducted at 1200 SF/H / 1000 CFM. kW rating for outdoor unit only.

FIG. 13

092499-1501
06542660

00024959 .11501



PSYCHROMETRIC CHART - Humidity - lb per lb of dry air and associated moisture

FIG. 11